18 March 2002

Docket Management System
US Department of Transportation
Room Plaza 401
400 Seventh Street, SW
Washington, DC 20590

RE: Docket No. FAA-2001-11032
Flight Deck Door Standards

Docket Management;

Thank you for the opportunity to address the issues raised in your request for comments related to flight deck door standards. The Aviation Policy Institute is pleased to submit the following comments.

Issues:

1. On the §25.795(a)(1) 300 Joule standard

The 300 Joule impact resistance standard is simply inadequate. The background discussion of the rule, as published in the Federal Register, correctly cites the language of P.L. 107-71, which calls for:

> "…strengthening of the flight deck door and locks…to ensure that the door cannot be forced open from the passenger compartment…"

This is not, however, what the new §25.795(a)(1) requires. Rather than ensuring that the door cannot be forced open from the passenger compartment, §25.795(a)(1) requires only a particular level of "resistance" be provided before the door opens. We believe that the level of resistance provided in the rule does not approach the level contemplated by Congress in enacting P.L. 107-71. What's more, the level of resistance provided does not approach the level actually required to accomplish the goals described in the Federal Register Notice.

In discussing the Final Rule, the FAA states that the 300 Joule resistance requirement,

> "…is not intended to prevent entry by a person using extraordinary means or with a large amount of time to work on opening the door. It is

> intended to deter attempts at entry and delay attempts until other actions can be taken to prevent entry." (page 2120)

We argue that the 300 Joule impact resistance standard does not accomplish this goal. For instance, according to our calculations, a 250 pound individual impacting the door at less than 5.5 miles per hour will exceed the 300 Joule threshold. With room to run and a speed of 10 miles per hour, that same individual will impact the door with a force calculated at over 1,100 Joules, or 835.75 foot pounds. Note that the mustering of this amount of energy does not require "extraordinary means" or "a large amount of time to work on opening the door." It requires only enough room to take a few steps towards the door. We encourage the FAA to require impact resistance in excess of 1,000 Joules on cockpit doors and bulkheads. As an alternative, we believe that a requirement for an aisle configuration that would not allow an individual to run directly at the door, coupled with a 400 Joule resistance requirement, may be sufficient.

Further, we believe that that a subject who lacks sufficient mass to reasonably exceed 300 Joules at impact has, at his or her disposal on the vast majority of commercial flights, equipment that will make an impact of this magnitude possible. We are speaking, of course, of the service carts on board most commercial aircraft.

A fully-loaded airline service cart may weigh over 250 pounds and is built to roll easily in the aircraft aisle. In a single-aisle aircraft, this cart would be a formidable weapon against the cockpit door, especially during a phase of flight in which a nose-down deck angle would help the cart toward its target. Consider a case in which a 175 pound man is able to take advantage of deck angle to push the service cart into the cockpit door at 10 miles per hour. The combined 425 pounds of cart and man would produce an impact upon the cockpit door of almost 2,000 Joules. What's more, given the design of many carts, the point of impact on the service cart would probably be along the edge of the cart's handle, producing tremendously high PSI. In a case where the service cart handle is at the same above-floor height as the flight deck door handle, the impact would almost certainly be enough to destroy the latch.

2. On the NIJ 0101.04 Level IIIA body armor standard

Although the NIJ 0101.04 Level IIIA body armor standard is, in general, probably a sufficient defense against handguns on board the aircraft, it is not clear that the Level IIIA and 300 Joule standard will defend against high-PSI attack using a material that does not exhibit plastic deformation. This is to say that a solid rod attached to the front of a service cart and run into a flight deck door will, in all likelihood, penetrate the door. The resulting breach will allow a handgun to be fired into the flight deck, negating the benefit of the 0101.04 Level IIIA standard. Note that the NIJ 0101.04 standard is specifically limited to ballistic threats and explicitly does not address high-PSI knife and pointed-object attacks, and the 300 Joule standard does not speak at all to punctures.

Given the potential for use of the service cart as an instrument by which an intruder may gain access to the flight deck, the concept of altering the aircraft interior in the vicinity of the door is valuable. Such alterations should be required in single-aisle aircraft where service carts are carried. At the very least, the FAA should require that a mechanical "stop" be installed on the aircraft that would prohibit the service cart traveling all the way to the flight deck door. Ideally, this stop would ensure that the cart did not approach within six feet of the door, thereby limiting the items that could be attached to the front of the service cart and used as a battering ram.

Finally, we point out that the NIJ 0101.04 standard was developed to evaluate personal body armor. As such, it is not a perfect fit for this application. If it is the intention of the FAA to require a door which protects the flight deck against "9 mm Full Metal Jacketed Round Nose (FMJ RN) bullets, with nominal masses of 8.0 g (124 gr) impacting at a minimum velocity of 427 m/s (1400

ft/s) or less, and 44 Magnum Semi Jacketed Hollow Point (SJHP) bullets, with nominal masses of 15.6 g (240 gr) impacting at a minimum velocity of 427 m/s (1400 ft/s) or less," then the rule should be written exactly that way. To require that the doors used in testing are sized to fit a 46 to 48 inch chest, for instance, is clearly a derivation of testing under this standard that should not be applied to cockpit doors. Given the amount of information in the standard that does not apply to this particular application, we think it prudent to simply write a standard that relates solely to the subject of cockpit door ballistic resistance.

Thank you again for the opportunity to comment.

Sincerely,

Dave Diamon
Aviation Policy Institute
AviationPolicy.org
Email: admin@aviationpolicy.org